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Infection of cultured and freshwater fishes with monogeneans in Syria

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Abstract

During a survey made in 2004 and 2005 in Syrian fish farms of the Orontes valley and on natural water fishes harvested in the Orontes River and in Lake Assad (a water reservoir of the Euphrates River), 145 specimens of fish belonging to 15 fish species were examined for monogenean infections. Eleven monogenean species (8 *Dactylogyrus* spp., 1 *Silurodiscoides* sp. and 2 *Cychlidogyrus* spp.) were found in the gills. Monogeneans infecting farm-cultured fishes were the same as those commonly occurring in cyprinids (*Dactylogyrus anchoratus*, *D. extensus*, *D. lamellatus*) and tilapia (*Cychlidogyrus tilapiae*, *C. arthracanthus*) cultured in Europe and in tropical countries. Among monogeneans found in fishes of natural waters, typical representatives of the Tigris-Euphrates Basin (*Dactylogyrus carassobarbi*, *D. holciki*) and species common in the Holoarctic zoogeographical zone (*D. alatus*, *D. carpathicus*, *D. distinguendus* and *Silurodiscoides vistulensis*) were equally found.

Introduction

Little is known about monogenean infections of fishes in the Middle East. From Syria there is only a single report (Samman, 1989), in which a rare parasite of the common carp, *Dactylogyrus minutus* is mentioned. More data is provided on the monogenean infections of both natural-water and cultured fishes in Iran and Iraq (Jalali & Molnár, 1990a, b; Molnár & Jalali, 1992; Gussev et al., 1993a, b, c). From the zoological point of view the fauna region of the Gulf basin, characterised by the rivers Tigris and Euphrates, is a very interesting territory, which represents an intermediate fauna region between the Palaearctic and Sino-Indian zoogeographical zones and is also influenced by the African fauna region. The ichthyofauna of this territory is composed mainly of endemic cyprinids and clarids, but several species of the Palaearctic fauna also inhabit its waters.

The objective of this study was to survey monogenean gill infections of some natural-water and pond-cultured fishes in Syria.

Materials and methods

In April 2004 and April 2005, two-week surveys on the parasite fauna of fishes were performed in Syria. Fishes from Lake Assad (Euphrates River) at Al-Thawra, from the Orontes River close to Homs and from fish farms of the Orontes basin (Al Ghab) were examined. Altogether 7 fish species from Lake Assad [*Barbus luteus* (Heckel, 1843) (17), *Garra rufa* (Heckel, 1843) (3), *Acanthobrama marmid* Heckel, 1843 (14), *Chalcalburnus mossulensis* (Heckel, 1843) (18), *Aspius vorax* Heckel, 1843

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(7), *Liza abu* (Heckel, 1843) (10), *Silurus triostegus* Heckel, 1843 (4)], 7 fish species from the Orontes River [*Barbus luteus* (Heckel, 1843) (4), *Acanthobrama listneri* Tortonese, 1952 (4), *Aspius vorax* Heckel, 1843 (2), *Silurus triostegus* Heckel, 1843 (3), *Garra variabilis* (Heckel, 1843) (7), *Phoxinellus drusensis* Pellegrin, 1933 (8), *Orthrias tigris* (Heckel, 1843) (3)], 4 species from fish farms (Al Ghab) [*Cyprinus carpio* L., 1758 (22), *Carassius auratus* (L., 1758) (8), *Ctenopharyngodon idella* (Valenciennes, 1854) (2), *Tilapia zillii* (Gervais, 1848) (9)] were dissected. The fish were either examined immediately at the site of capture or transported to the laboratory in plastic bags with oxygenated water. The gills were checked under a Zeiss stereomicroscope. Of the monogeneans found, only specimens belonging to Dactylogyridae were collected and preserved. Low levels of *Gyrodactylus* spp. and *Diplozoon* spp. were noted in selected hosts but data are not presented here. Monogenean specimens found were placed under a coverslip into ammonium picrate solution (Fernando et al., 1972) or in glycerine jelly (Gussev, 1983).

Results

Of the 15 fish species examined, only 8 were infected with 11 species of dactylogyrid monogeneans of the genera *Dactylogyrus, Silurodiscoides* and *Cychlidogyrus* (Table 1). All species found are new for the Syrian fauna. In most cases, the parasites were found at a low prevalence and low intensity of infection. *Garra rufa, G. variabilis, Phoxinellus drusensis* and *Carassius auratus* were free from dactylogyrid infection.

Discussion

This paper reports the parasite fauna of 15 fish species in Syria for the first time. The monogenean fauna of Syrian fishes bears both the marks of fishes of the Palaearctic region and those of the Persian Gulf intermediate zoogeographical zone. Seven parasite species (*Dactylogyrus alatus* Linstow, 1878, *D. anchoratus* (Dujardin, 1845), *D. carpathicus* Zachvatkin, 1951, *D. distinguendus* Nybelin, 1937, *D. extensus* Mueller et Van Cleave, 1932, *D. lamellatus* Achmerow, 1952 and *Silurodiscoides vistulensis* (Siwak, 1932) are common parasites of fishes in the Palaearctic zoogeographical zone, two species (*D. carassobarbi* Gussev et al., 1993 and *D. holciki* Molnár et Jalali, 1992) are typical representatives of the Gulf intermediate zone. On the other hand, *Cychlidogyrus tilapiae* Paperna, 1960 and *C. arthracanthus* Paperna, 1960 are of African origin. The Monogenea of cultured cyprinids and tilapiae in the current study are the same as described by Paperna (1959, 1960) in Israel and by Molnár (1971) in Hungary. It seems to be obvious that diseases caused by these parasites might be similar as described by the above authors. The monogeneans of natural-water fishes seem to be similar to those found in Iran (Jalali & Molnár, 1990a, b; Molnár & Jalali, 1992; Gussev et al., 1993a, c) and in Iraq (Gussev et al., 1993b). This means that only some of the parasites (*D. carassobarbi* and *D. holciki*) of fishes from the Euphrates region are endemic species, and the majority of parasites found in local fishes are also found in closely related fishes of the Holoarctic region. An endemic barbel species (*Barbus luteus*) was infected both with

Name of parasite	Host	No. exam.	No. infect.	Locality
Dactylogyrus anchoratus (Dujardin, 1845)	*Cyprinus carpio*	22	2	Fish farms
Dactylogyrus extensus (Mueller et Van Cleave, 1932)	*Cyprinus carpio*	22	21	Fish farms
D. lamellatus (Achmerow, 1952)	*Ctenopharyngodon idellus*	3	3	Fish farms
D. carpathicus (Zachvatkin, 1951)	*Barbus luteus*	17	3	Lake Assad
D. carassobarbi (Gussev, Jalali, Molnár, 1993)	*Barbus luteus*	17	12	Lake Assad
D. alatus (Linstow, 1878)	*Chalcalburnus mossulensis*	18	8	Lake Assad
*D. holciki (*Molnár et Jalali, 1992)	*Chalcalburnus mossulensis*	18	1	Lake Assad
D. distinguendus (Nybelin, 1937)	*Acanthobrama marmid*	14	9	Lake Assad
D. distinguendus (Nybelin, 1937)	*Acanthobrama lissneri*	4	3	Orontes
Silurodiscoides vistulensis (Sivak, 1932)	*Silurus triostegus*	4	4	Lake Assad
Cychlidogyrus tilapiae (Paperna, 1960)	*Tilapia zillii*	9	9	Fish farms
Cychlidogyrus arthracanthus (Paperna, 1960)	*Tilapia zillii*	9	2	Fish farms

Table 1. Monogenean species found during the survey of Syrian freshwater fishes.

D. carassobarbi known from the Tigris River and with *D. carpathicus*, a species commonly found also in the gills of the European barbel (*Barbus barbus*). In a similar manner, only a single monogenean species (*D. holciki*) of *Chalcalburnus mossulensis* proved to be endemic for the Gulf Basin, while *D. alatus* represented a parasite commonly occurring in Europe on *Alburnus alburnus*. The two *Acanthobrama* species were infected with *D. distinguendus*, a parasite of *Abramis brama* and *Blicca bjoerkna*, while *Silurus triostegus* harboured *S. vistulensis*, the common parasite of the European sheatfish (*Silurus glanis*). All monogeneans listed in this paper are new for the Syrian fauna.

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